

**THERMAL REMEDIATION SOLUTIONS
ORDER NO. R4-2004-XXXX**

FILE NO. 94-080

**ATTACHMENT 1:
CLEANUP LIMITS FOR PETROLEUM HYDROCARBON
CONTAMINATED SOIL DISPOSAL**

**T
E
N
T
A
T
I
V
E**

T
E
N
T
A
T
I
V
E

Table 4-1: Maximum Soil Screening Levels (mg/kg) for TPH and BTEX above Drinking Water Aquifers

T P H	Distance Above Groundwater	Carbon Range					
		C4-C12	C13-C22	C23-C32			
	>150 feet	1,000	10,000	50,000			
	20-150 feet	500	1,000	10,000			
	<20 feet	100	100	1,000			
B T E X	Distance Above Groundwater	Lithology					
		Gravel	Sand	Silt	Clay		
	150 feet	B=0.044 T=2 E=8 X=23	B=0.077 T=4 E=17 X=48	B=0.165 T=9 E=34 X=93	B=0.8 T=43 E=170 X=465		
		80 feet	B=0.022 T=1 E=4 X=11	B=0.033 T=2 E=7 X=20	B=0.066 T=4 E=15 X=40	B=0.34 T=18 E=73 X=200	
			20 feet	B=0.011 T=0.15 E=0.7 X=1.75	B=0.011 T=0.3 E=0.7 X=1.75	B=0.011 T=0.45 E=2 X=5.3	B=0.044 T=2.3 E=9 X=24.5

- TPH = Total petroleum hydrocarbons.
- BTEX = benzene, toluene, ethylbenzene, and xylenes, respectively. MCLs (ppm): B=0.001, T=0.15, E=0.7, X=1.75.
- MTBE (methyl tertiary butyl ether) must be included in BTEX analyses.
- BTEX screening concentrations determined per the attenuation factor method as described in RWQCB Guidance for VOC Impacted Sites (March 1996), with a natural degradation factor of 11 for benzene. Table values for BTEX can be linearly interpolated between distance above groundwater and are proportional to fraction of each lithological thickness.
- Values in Table 4-1 are for soils above drinking water aquifers. All groundwaters are considered as drinking water resources unless exempted by one of the criteria as defined under SWRCB Resolution 88-63 (TDS>3000 mg/L, or deliverability <200 gal/day, or existing contamination that cannot be reasonably treated). Regional Board staff will make a determination of potential water use at a particular site considering water quality objectives and beneficial uses. For non-drinking water aquifers, regardless of depth, TPH for ">150 feet" category in the table should be used; BTEX screening levels are set at 100 times respective MCLs as preliminary levels determined to be protective of human health and the environment.
- Distance above groundwater must be measured from the highest anticipated water level. Lithology is based on the USCS scale.
- For BTEX, each component is not to exceed the specified screening level.
- For TPH, the total allowable for each carbon range is not to be exceeded. In areas of naturally-occurring hydrocarbons, Regional Board staff will make allowance for TPH levels.
- BTEX to be analyzed by EPA Method 8020 or EPA Method 8260 (usually for confirmation).
- TPH to be analyzed by EPA Methods 418.1 plus 8015 (Modified). Ranges of TPH to be analyzed by GC/MS carbon range methods (EPA Method 8260) or EPA Method 8015 (Modified).